

## WHAT IS CLAIMED IS:

1. A data communication system comprising:  
a transmitter having first and second transmitting antennae (36, 38), the signal  
5 path of the first antenna (36) exhibiting a different delay than the signal path of the  
second antenna (38); and  
a receiver having third and fourth receiving antennae (36, 38), the signal path of  
the third antenna (36) exhibiting a different delay than the signal path of the fourth  
antenna (38).  
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2. The data communication system of Claim 1, wherein a nonzero delay of  
one of the signal paths of the first and second antennae (36, 38) is different from a  
nonzero delay of one of the signal paths of the third and fourth antennae (36, 38).  
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3. The data communication system of Claim 2, wherein the value of one of  
the nonzero delays is twice the value of the other nonzero delay.
4. The data communication system of Claim 1, wherein the transmitter  
20 further comprises a transceiver which is capable of both transmission and reception at  
different times by means of the first and second antennae (36, 38); and  
wherein the receiver further comprises a transceiver which is capable of both  
transmission and reception at different times by means of the third and fourth antennae  
(36, 38).  
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5. The data communication system of Claim 1, wherein the data further  
comprises voice data.
6. The data communication system of Claim 1, wherein the data further  
30 comprises digital data.

7. The data communication system of Claim 1, wherein the RF signal path of the first antenna (36) comprises an RF delay element and an RF adder (40) and the signal path of the second antenna (38) comprises an RF adder (40); and

wherein the RF signal path of the third antenna (36) comprises an RF delay  
5 element and an RF adder (40) and the RF signal path of the fourth antenna (38) comprises an RF adder (40).

8. The data communication system of Claim 1, wherein the transmitter further comprises at least one or more of a coder (14) and a guard interval insertion  
10 processor (20); and

wherein the receiver further comprises at least one or more of a decoder (66) responsive to codes utilized by the coder (14) and a guard interval recognition processor (20).

15 9. The data communication system of Claim 1, wherein the delays comprise RF delays.

10 10. The data communication system of Claim 1, wherein the delays comprise IF delays.

20 11. The data communication system of Claim 1, wherein the delays comprise baseband delays.

12. A WLAN system comprising:  
25 an access point having a transceiver coupled to first and second transceiving antennae (36, 38), the signal path of the first antenna (36) exhibiting a different delay than the signal path of the second antenna (38); and

one or more mobile terminals (80a, 80b, 80c, 80d) each having a transceiver coupled to third and fourth (36, 38) transceiving antennae, the signal path of the third  
30 antenna (36) exhibiting a different delay than the signal path of the fourth antenna (38).

13. The WLAN system of Claim 12, wherein a nonzero delay of one of the signal paths of the first and second antennae (36, 38) is different from a nonzero delay of one of the signal paths of the third and fourth antennae (36, 38).

5 14. The WLAN system of Claim 13, wherein the value of one of the nonzero delays is twice the value of the other nonzero delay.

15 15. The WLAN system of Claim 12, wherein the multiple antennae (36, 38) and different delays provide an (L,L) diversity system exhibiting 2L diversity plus 10log10(L) dB performance.

16. The WLAN system of Claim 12, wherein each transceiver further comprises an OFDM system.

15 17. The WLAN system of Claim 16, wherein the OFDM system utilizes one of binary phase shift keying (BPSK), quadrature phase shift keying (QPSK), 16-quadrature amplitude modulation (16-QAM) or 64-QAM.

20 18. The WLAN system of Claim 12, wherein each transceiver further comprises at least one or more of a coder (14) and a guard interval insertion processor (20); and at least one or more of a decoder (66) responsive to codes utilized by the coder (14) and a guard interval recognition processor (20).

25 19. The WLAN system of Claim 12, wherein the delays comprise RF delays.

20. The WLAN system of Claim 12, wherein the delays comprise IF delays.

21. The WLAN system of Claim 12, wherein the delays comprise baseband delays.

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